

Claims:

1. A mixing apparatus for mixing livestock feed, said apparatus comprising;
a container for the reception of feed;
said container including:
 - a floor,
 - a wall extending away from said floor such that substantially all of said wall is disposed above said floor, said wall defining a top opening disposed remote from said floor for the reception therethrough of the feed, the arrangement being such that said floor and said wall define therebetween an enclosure for the feed received through the top opening;
 - at least one auger disposed within said enclosure having an upper core and a lower core, said lower core having an axis of rotation extending substantially perpendicular to a plane of the floor,
 - said upper core including a centerline positioned longitudinally and centered in said upper core,
 - said centerline of said upper core being non-concentric with said axis of rotation.
2. The mixing apparatus of claim 1 wherein said centerline of said upper core is disposed at an angle to said axis of rotation.
3. The mixing apparatus of claim 2 wherein the angle of said upper core is adjustable, so that varying degrees of non-concentricity can be achieved.
4. The mixing apparatus of claim 3 wherein said upper core angle is adjustable using a plate type shim.
5. The mixing apparatus of claim 2 wherein the angle of said upper core comprises a range of 1 to 30 degrees.
6. The mixing apparatus of claim 5 wherein the range comprises 5 to 15 degrees.
7. The mixing apparatus of claim 1 wherein said centerline of said upper core is parallel and offset from said axis of rotation.

8. A mixing apparatus for mixing livestock feed, said apparatus comprising;
a container for the reception of feed;
said container including:
 - a floor,
 - a wall extending away from said floor such that substantially all of said wall is disposed above said floor, said wall defining a top opening disposed remote from said floor for the reception therethrough of the feed, the arrangement being such that said floor and said wall define therebetween an enclosure for the feed received through the opening;
 - at least one auger disposed within said enclosure, said auger having an axis of rotation extending substantially perpendicular to a plane of the floor,
said auger including flighting having an outer edge,
a first maximum extent of a first portion of said flighting being substantially smaller than a maximum extent of a second portion of said flighting that is substantially opposite the first portion.
9. The mixing apparatus of claim 8 wherein:
said flighting includes lower flighting and lobed upper flighting,
so that said outer edge of said upper flighting is closer to said enclosure during one portion of said auger rotation.
10. The mixing apparatus of claim 8 wherein:
said flighting includes an upper flighting,
said upper flighting further includes a plurality of knives,
so that said knives of said upper flighting are closer to said enclosure during one portion of said auger rotation.
11. An auger for a feed type mixing apparatus, comprising:
an upper core; and
a lower core, said lower core having an axis of rotation,
said upper core including a centerline positioned longitudinally and centered in said upper core,

- said centerline of said upper core being non-concentric with said axis of rotation.
12. The auger as claimed in claim 11, wherein said centerline of said upper core is disposed at an angle to said axis of rotation.
 13. The auger as claimed in claim 12 wherein the angle of said upper core is adjustable, so that varying degrees of non-concentricity can be achieved.
 14. The auger as claimed in claim 13 wherein said upper core angle is adjustable using a plate type shim.
 15. The auger as claimed in claim 12 wherein the angle of said upper core comprises a range of 1 to 30 degrees.
 16. The auger as claimed in claim 15 wherein the range comprises 5 to 15 degrees.
 17. The auger as claimed in claim 11 wherein said centerline of said upper core is parallel and offset from said axis of rotation.
 18. In an auger for a feed type mixing apparatus, the improvement comprising:
a flighting having an outer edge and an axis of rotation, a first maximum extent of a first portion of said flighting being substantially smaller than a maximum extent of a second portion of said flighting that is substantially opposite the first portion.
 19. The auger as claimed in claim 18, wherein said flighting further comprises a plurality of knives.